ABSTRACT OF THE DISCLOSURE

A method for manufacturing a semiconductor device is disclosed. One example manufacturing method includes successively depositing gate insulating layer forming material and gate electrode forming material on a semiconductor substrate and patterning the gate insulating layer forming material and the gate electrode forming material to form a gate insulating layer and a gate electrode. The example manufacturing method further includes performing a nitrogen ion-implantation to a front face of the substrate and annealing the substrate so as to form a re-oxidation layer that has different thickness on the sidewalls of the gate electrode and on the substrate. The example method results in semiconductor gate electrodes and sidewalls having different oxidation rates so that a thickness of the re-oxidation layer of the sidewalls of the gate electrode is relatively thickened.